In re WILLIAMS ET AL., Application No. 10/051,728
Amendment A

Amendments to the Claims:

    The listing of clams will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

    Claims 1-11 (canceled)

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Claim 12 (currently amended): A method for mapping packets to paths during a current forwarding cycle in a packet switching device, the method comprising:

identifying generating a random index, the random index identifying a current particular path of a plurality of paths in the packet switching device;

repeating for each first particular packet of a first-set-of plurality of packets stored in a recirculation buffer: in response to determining whether-the-first that said particular packet can be sent over a-first the current particular path of-a-plurality-of-paths, the-first-particular path-identified based on the-random-index-and a path occupancy of the current particular path, ;-and causing said first particular packet to be sent over the first current particular path and advancing the current particular path to a next path of the plurality of paths not already mapped for forwarding a packet during the current forwarding cycle; and or-to-remain-in-the recirculation-buffer-based-on-the-result-of-said-determining-whether-the-first-particular-packet can-be-sent; and-repeating-to-cause-packets-to-be-sent-over-a-set-of-remaining-paths-of-the plurality-of-paths-not-currently-sent-a-packet-from-the-recirculation-buffer:

subsequent to the operation of said for each particular packet, while there remains at least one path of the plurality of paths not already mapped for forwarding a packet during the current forwarding cycle and at least one more input packet: identifying a next input packet of said input packets; determining-whether-a-second-particular and if the next input packet of-a second-set-of-received-packets can be sent over a-second the current particular path of-a plurality-of-paths,-the-second-particular-path-identified as determined based on the-random index-and-the a path occupancy of the particular path, ;-and then causing said second particular next input packet to be sent over the second current particular path and advancing the current particular path to a next path of the plurality of paths not already mapped for forwarding a packet during the current forwarding cycle if any such non-mapped paths remain, else or-to-remain-in moving said next input packet into the recirculation buffer, based on-the-result-of-said-determining-whether-the-second-particular-packet-can-be-sent.

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Claim 13 (currently amended): The method of claim 12, wherein said forwarding cycle repeated once for each corresponds to a packet time.

Claim 14 (canceled)

Claim 15 (currently amended): The method of claim 14 claim 13, wherein the current packet time corresponds to a round of sending one packet over each of the plurality of paths.

Claim 16 (original): The method of claim 12, wherein each of the plurality of paths corresponds to a different physical plane of a packet switching system.

Claim 17 (original): The method of claim 12, wherein the plurality of paths does not include all of the planes of a packet switching system.

Claim 18 (original): The method of claim 12, wherein the plurality of paths includes all of the planes of a packet switching system.

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Claim 19 (currently amended): A One or more computer-readable media medium containing computer-executable instructions for performing the method of claim 12 operations for mapping packets to paths during a current forwarding cycle in a packet switching device, said operations comprising:

generating a random index, the random index identifying a current particular path of a plurality of paths in the packet switching device;

for each particular packet of a plurality of packets stored in a recirculation buffer: in response to determining that said particular packet can be sent over the current particular path based on a path occupancy of the current particular path, causing said particular packet to be sent over the current particular path and advancing the current particular path to a next path of the plurality of paths not already mapped for forwarding a packet during the current forwarding cycle: and

subsequent to the operation of said for each particular packet, while there remain at least one path of the plurality of paths not already mapped for forwarding a packet during the current forwarding cycle and at least one more input packet: identifying a next input packet of said input packets: and if the next input packet can be sent over the current particular path as determined based on a path occupancy of the particular path, then causing said next input packet to be sent over the current particular path and advancing the current particular path to a next path of the plurality of paths not already mapped for forwarding a packet during the current forwarding cycle if any such non-mapped paths remain, else moving said next input packet into the recirculation buffer.

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     Claim 20 (currently amended): An apparatus for forwarding information over a plurality of paths, the apparatus comprising:

     a recirculation buffer to store a first set of packets;

     a random index generator to generate a random index;

     an input to receive a second set of packets; and

     control logic coupled to the recirculation buffer, the random index generator, the set of paths, and the input;

     wherein the control logic ~~attempts~~ is configured to attempt to forward ~~a packet~~ packets over each of the plurality of paths each packet time from the first and second sets of packets with preference given to each packet in the first set of packets over each packet in the second set of packets, wherein a possible particular path for a particular packet is determined based on the random index and the number of packets previously assigned to one of the plurality of paths during the current packet time; ~~and an occupancy rate of the plurality of paths during a particular packet time,~~ and wherein a particular packet remains or is added to the recirculation buffer if it is not sent over ~~one of the plurality of paths~~ its said possible particular path during the ~~particular~~ current packet time.

     Claim 21 (currently amended): The apparatus of claim 20, wherein the particular packet is not sent during the ~~particular~~ current packet time if a destination of the particular packet is not reachable over its ~~corresponding the~~ said possible particular path.

     Claim 22 (currently amended): The apparatus of claim 21, comprising a storage mechanism, coupled to the control logic, including a data structure containing an indication of whether or not ~~to indicate whether~~ the destination is reachable over ~~the~~ its said possible particular path.

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Claims 23-30 (canceled)

Claim 31 (new): The method of claim 12, wherein if said particular packet is not determined that it can be sent over the current particular path, said particular packet is moved to the end of the recirculation buffer.

Claim 32 (new): The computer-readable media of claim 19, wherein said operations include moving said particular packet to the end of the recirculation buffer if said particular packet is not determined that it can be sent over the current particular path.

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Claim 33 (new): An apparatus for mapping packets to paths during a current
forwarding cycle in a packet switching device, the apparatus comprising:

means for generating a random index, the random index identifying a current particular
path of a plurality of paths in the packet switching device;

means for processing each particular packet of a plurality of packets stored in a
recirculation buffer, said processing including: in response to determining that said particular
packet can be sent over the current particular path based on a path occupancy of the current
particular path, causing said particular packet to be sent over the current particular path and
advancing the current particular path to a next path of the plurality of paths not already
mapped for forwarding a packet during the current forwarding cycle; and

means for assigning packets to remaining unused paths subsequent to said processing
each particular packet, said operation of assigning including: while there remains a path of the
plurality of paths not already mapped for forwarding a packet during the current forwarding
cycle and at least one more input packet: (a) identifying a next input packet of said input
packets; and (b) if the next input packet can be sent over the current particular path as
determined based on a path occupancy of the particular path, then causing said next input
packet to be sent over the current particular path and advancing the current particular path to a
next path of the plurality of paths not already mapped for forwarding a packet during the
current forwarding cycle if any such non-mapped paths remain, else moving said next input
packet into the recirculation buffer.